

CLUSTERING OF FREQUENCY-BASED VIBRATION
SIGNAL FOR BEARING FAULT DETECTION

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CLUSTERING OF FREQUENCY-BASED VIBRATION SIGNAL
FOR BEARING FAULT DETECTION

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Report submitted in partial fulfillment of the requirements
for the award of Bachelor of Mechanical Engineering

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EXAMINER'S DECLARATION

I certify that the project entitled "Clustering of Frequency-Based Vibration Signal for Bearing Fault Detection" is written by Chia Ming Xuan. I have examined the final copy of this report and in my opinion, it is fully adequate in terms of language standard, and report formatting requirement for the award of the degree of Bachelor of Engineering. I herewith recommend that it be accepted in partial fulfillment of the requirements for the degree of Bachelor of Mechanical Engineering.

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STUDENT'S DECLARATION

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LIST OF SYMBOLS

Hz	hertz
kHz	kilo hertz
F	force
k	stiffness
c	damping coefficient
x	displacement
\dot{x}	velocity
\ddot{x}	acceleration
k	spring constant
m	mass
Δ	distance travel
w	weight
\bar{x}	mean of x
C^{n^2}	matrix with n rows and n columns
c, cov	covariance
Dim	dimension
eig	eigenvector
mV/g	mili volts per gravity

LIST OF ABBREVIATIONS

ASiVR	Advance Structural Integrity and Research
NI-DAQ	National Instrument Data Acquisition System
PCA	Principal Component Analysis
RPM	Revolution per minute
rev	revolution
min	minute
SOM	Strength of material
D. C.	Direct current
FFT	Fast Fourier Transform
FDI	Fault Detection and Isolation
PC	Principle component